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# BOTANY.[1]

An Overlooked Function of Many Fruits.—It is a matter of common observation that many fruits (carpels) are green in color for a considerable period after the fertilization of the ovules, but I am not aware that particular attention has been called to the significance of this fact. Different botanical authors mention, incidentally as it were, the fact that as long as the young fruits are green they, of course, perform the functions of leaves, by the fixation of carbon in the process of assimilation. All such statements, however, take no account of the fact that young fruits, for the most part, are not green at first, but become so during their increase in size; in other words, the *greening* of the young fruit has been overlooked as having any significance. It has apparently been assumed that young fruits must turn green as a matter of course.

I wish to suggest that the very general development of chlorophyll-bearing tissue is for the nutrition of the embryo in the seed. The White Elm (*Ulmus americana* L.) affords a good illustration of this function of the fruit. At the time of flowering there are no leaves upon the tree, nor do any appear until the fruits are full grown, yet within a few days after the fertilization of the ovules, the growing fruits cover the tree with a green coat resembling that afforded by the leaves themselves a few weeks later. The first assimilation by this tree in the spring is done by the chlorophyll-bearing tissue of the young fruits. The same holds true for the Red Elm (*Ulmus fulva* Mich.).

The Box Elder (*Negundo aceroides* Moench) develops its fruits much later, but they take on likewise a rich green color, and in the latter part of May in some instances add fully fifty per cent. to the assimilating surface of the tree. Maples, Ashes, and even Poplars and Willows, the latter to a less degree, present the same phenomena, and in fact, in by far the greater number of instances the greening of the fruit for aid in the work of assimilation is the rule.

In the Pines and their allies the development of chlorophyll-bearing tissue is confined to the scales of the cone. In the biennial species there is but little green tissue the first year, when the ovule is dormant, but with the beginning of those rapid changes which occur in the spring of the second year, the scales become enlarged into great masses of parenchyma richly provided with chlorophyll. So marked is this that I have often wondered whether the scale was not primarily developed as an organ of nutrition. I have thought, sometimes, that possibly the scale was but a kind of dorsal growth of the ovule, in order to provide itself with an assimilating tissue. —*Charles E. Bessey.*

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[1] **Edited by Prof. Chas. E. Bessey, Lincoln, Neb.**

A DEPAUPERATE GRASS.—The accompanying illustrations (Figs. 1 and 2) show a depauperate individual of *Sporobolus vaginæflorus*, found entangled in the roots of a *Solidago* which was collected on the high prairie a few miles southwest of Lincoln. This little grass had three flowers, two of which had ripened seeds. The lower one of the three was still included in the upper leaf sheath.

The sod from which the specimen was taken was formed of *Stipa spartea, Andropogon provincialis, A. scoparius* and *Bouteloua racemosa*, and a close observer would find no trace of the Sporobolus. In fact, *S. vaginæflorus* does not appear on the uplands except where the ground has been broken by natural or artificial agencies. The presence of this single specimen clinging to the roots of a high prairie denizen is of great significance in explaining its apparently sudden appearance on gopher mounds and along cultivated fields.

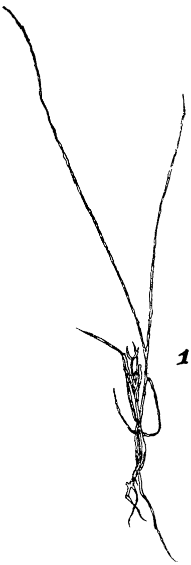

FIG. 1.—Plant of *Sporobolus vaginæflorus* Torr., natural size.

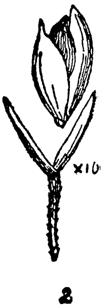

FIG. 2.-A spikelet dissected, magnified ten diameters.

The existence of depauperate plants stowed away down out of sight, struggling hard with the powerful and strong for a scanty subsistence, waiting for better conditions and better times, doubtless bears a more important relation than has been thought to the sudden appearance of strange plants.—*Jared G. Smith, Lincoln, Neb.*

BOTANICAL NEWS.—The "Preliminary Catalogue of Anthophyta and Pteridophyta reported as growing spontaneously within one hundred miles of New York City," compiled by a committee of the Torrey Botanical Club, is a valuable addition to catalogue literature. It is important also on account of the adoption by the club of the term Anthophyta for the Flowering plants.—The Proceedings of the Forestry Convention, held in Grand Rapids, Michigan, January 26 and 27, 1888, has been published in a pamphlet of sixty pages, and contains along with much indifferent matter some which has value.—In marked contrast with the foregoing in the treatment of the subject are the "Lectures on Forests and Forest Products," given by Dr. G. L. Goodale before the Lowell Institute, in February and March of 1888. The Syllabus of the lectures shows a thoroughly scientific treatment of the subject. Perhaps the two methods of handling the subject are necessary, but for our part we greatly prefer that of the Harvard professor.—Dr. N. L. Britton has described and figured the remains of a supposed plant from the white crystalline limestone (Archaean) of Sussex Co., New Jersey. He names it *Archæophyton newberryanum,* and gives a good plate. The paper appeared in the Annals of the New York Academy of Sciences, Vol. IV., No. 4. —The microscopical anatomy of the common cedar apple (*Gymnosporangium macropus*) has been investigated by Elmer Sanford (in the Botanical Laboratory of the University of Michigan), the results of which appeared as a paper in the February number of the *Annals of Botany.*—Dr. Farlow has added to his list of works on North American Fungi by the publication of nearly one hundred additional titles, in No. 30 of the Bulletins of Harvard University Library.—In Professor Trelease's study of the North American Geraniaceæ (Memoirs Boston Society Nat. Hist., Vol. IV.) the author has brought together descriptions of our species of the order, with biological notes, references to their pollination, dissemination, etc. Four good plates aid in giving to the monograph greater value.

## ZOOLOGY.

North American Infusoria.—Dr. A. C. Stokes has done students of the Infusoria good service in collecting together in his "Preliminary Contribution toward a History of the Fresh-water Infusoria of the United States" (*Journal Trenton Nat. Hist. Soc.,* vol. i., pp. 71–344, pls. xiii., 1888), an extended catalogue of all the known species in the United States. Even his own papers appeared in so many places that it was rapidly becoming impossible to keep track of them all. In the present catalogue 351 species are enumerated, distributed as follows:—

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|---|---|---|---|
| Flagellata | | | 153 |
| | Monadina | 27 | |
| | Euglenoidea | 46 | |
| | Heteromastigoida | 20 | |
| | Isomastigoida | 24 | |
| | Choano-flagellata | 30 | |
| | Dino-flagellata | 3 | |
| | Cilio-flagellata | 3 | |
| Ciliata | | | 268 |
| | Holotricha | 58 | |
| | Heterotricha | 29 | |
| | Peritricha | 122 | |
| | Hypotricha | 59 | |
| Suctoria | | | 30 |

It will be noticed that Dr. Stokes accepts both the Cilio- and the Dino-flagellata, contrary to the recent classifications. His reasons